CONTENTS

PLASMA DIFFUSION TREATMENT	
Plasma surface engineering of low alloy steel	419
Plasma nitriding in industry—problems, new solutions and limits	435
Sputtering, deposition, and diffusion in ion-nitriding of an austenitic stainless steel	442
Influence of pulsed d.cglow-discharge on the phase constitution of nitride layers during plasma nitro-carburizing of sintered materials	448
Plasma overcarburizing of chromium steels for hot working and wear applications	454
Plasma carburization of wear-resistant high chromium iron	461
Plasma nitriding improvements of fatigue properties of nodular cast iron crankshafts	469
Plasma heat treatment of steel: microstructure, properties and applications	474
Formation of TiAl ₃ layer on titanium alloys	479
Application of ion nitriding to wire-electrical-discharge-machined blanking dies	486
Nitrogen microwave discharge as a source of excited neutral species for possible surface treatment C. Chave, C. Boisse-Laporte, J. Marec and Ph. Leprince (Orsay, France)	494
Formation of TiN layers by plasma-assisted chemical vapour deposition at temperatures greater than 823 K	499
Properties of composite layers produced on stainless steel under glow discharge conditions	505
PLASMA TECHNOLOGY	
Dynamic interactions in the physical properties of magnetron deposition systems	510
An investigation into the effects of plasma bombardment anisotropy in low frequency r.f. glow discharges	517
Ion-assisted deposition with a new plasma source	523
Zirconia thin film deposition on silicon by reactive gas flow sputtering: the influence of low energy particle bombardment	528
TiN plasma CVD coatings deposited by different excitation methods for the gas discharge	534
Plasma synthesis of disperse oxide materials from disintegrated solutions Y. N. Tumanov and A. V. Sigailo (Kashira Highway, U.S.S.R.)	539
Properties and performance of plasma-assisted physically vapor-deposited TiC coatings	549

Characterization of TiN coatings deposited on plasma nitrided tool steel surfaces	
Development of large area sputter-coating method using magnetized a.c. plasmas with inclined electrodes	
Y. Matsuda, K. Kuwahara and H. Fujiyama (Nagasaki, Japan)	
Averaging effect of radical particle profile by the scanning plasma method in SiH ₂ -Ar plasmas	569
A coating thickness uniformity model for physical vapour deposition systems—further validity tests K. S. Fancey, P. A. Robinson, A. Leyland, A. S. James and A. Matthews (Hull, U.K.)	576
HARD COATINGS	
A review of the methods for the evaluation of coating-substrate adhesion	583
Tribological properties and wear behaviour of sputtered titanium-based hard coatings under sheet-metal-	
B. Matthes, W. Herr, E. Broszeit, K. H. Kloos, G. Nürnberger, D. Schmoeckel (Darmstadt, F.R.G.), F. Höhl, HR. Stock and P. Mayr (Bremen, F.R.G.)	
Evaluation of some new titanium-based ceramic coatings in tribological model wear and metal-cutting	
H. Ronkainen, I. Nieminen, K. Holmberg (Espoo, Finland), A. Leyland, K. S. Fancey, A. Matthews (Hull, U.K.), B. Matthes and E. Broszeit (Darmstadt, F.R.G.)	
Two-phase ${\rm TiC/TiB_2}$ hard coatings	609
Fundamental properties and wear resistance of r.fsputtered TiB_2 and $Ti(B,N)$ coatings W. Herr, B. Matthes, E. Broszeit and K. H. Kloos (Darmstadt, F.R.G.)	616
A comparison of the corrosion behaviour and hardness of steel samples (100Cr6) coated with titanium nitride and chromium nitride by different institutions using different deposition techniques	625
Influence of deposition conditions on the adhesion of sputter-deposited W–C–(Co) films	631
Physical vapour deposition of TiN hard coatings with additional electron beam heat treatment	639
Tribological properties of r.fsputtered titanium-based hard coatings and their behaviour under plastics-	
G. Paller, B. Matthes, W. Herr and E. Broszeit (Darmstadt, F.R.G.)	647
Amorphous and crystalline phases in PVD coatings after laser treatment	655
Ti–N films created in close vicinity of transition from α -Ti(N) to δ -TiN $_x$ phase	660
Deposition of hard coatings by a hollow-cathode arc evaporation device	666
Sputter deposition of wear-resistant coatings within the system Zr-B-N	670
Preparation and properties of metastable TiC/SiC PVD coatings for wear protection	676
High speed pipe inner coating using magnetron hollow-cathode discharge in a magnetic field H. Kawasaki, T. Nakashima and H. Fujiyama (Nagasaki, Japan)	682
Structure and properties of ion-plated aluminium bronze films	687

Development of a large area sputter-coating method using a new magnetron discharge	691
The influence of the reactive gas flow on the properties of AIN sputter-deposited films	696
Properties of sputtered stainless steel-nitrogen coatings and structural analogy with low temperature plasma nitrided layers of austenitic steels	702
Formation of metallic coatings on non-heated substrates by the impulse plasma method	709
Characterization of remote plasma-enhanced chemical vapour deposition processes	715
A comparative study of the corrosion performance of TiN, Ti(B,N) and (Ti,Al)N coatings produced by physical vapour deposition methods	722
Characterization of surface chromium and molybdenum alloying on gray cast iron obtained by the plasma-transferred arc technique	727
Plasma impulse chemical vapour deposition—a novel technique for the production of high power laser mirrors	733
SUPERHARD COATINGS	
Deposition and properties of diamond thin films	741
Microstructure of diamond films near the interface with WC substrate	747
Manufacture of c-BN films with improved adhesion	753
Forming of a grinding wheel using a dresser with brazed diamond film	759
C: H COATINGS	
The deposition of Ag-C:H films: a tool to understand the role of carbide-forming metals in the Me-C:H deposition process	764
Deposition of diamond-like carbon films by the anodic arc technique	770
Investigations of the structure of a-C:H films	775
Cathodic arc deposition of diamond-like carbon: effect of bias voltage and deposition angle B. Rother, J. Siegel, I. Mühling and H. Fritzsch (Chemnitz, F.R.G.)	780
Microwave plasma apparatus for deposition of hydrogenated amorphous carbon layers K. Hammer, S. Roth, B. Mainz, O. Stenzel, W. Scharff (Chemnitz, F.R.G.), W. Dworschak, R. Kleber, A. Krüger, K. Jung and H. Ehrhardt (Kaiserslautern, F.R.G.)	784
Plasma and particle flux characterization of the a-C: H deposition process by ion-assisted methods G. Schaarschmidt, F. Scholze, S. Porsch, F. Wolf, T. Wallendorf, W. Scharff (Chemnitz, F.R.G.), J. Gerber, R. Kleber, W. Dworschak, A. Krüger, K. Jung and H. Ehrhardt (Kaiserslautern, F.R.G.)	788

(Nb-C:H)	795
Sputtered stainless steel-carbon coatings as a substitute for hard electrolytic chromium for potential applications in mechanics	802
Interaction of graphite with an energetic hydrogen isotope beam	809
GENERAL ASPECTS AND ARC TECHNIQUES	
(Ti-Al)N advanced films prepared by arc process	816
Relations between plasma properties of thin copper films produced by an anodic vacuum arc	825
Cathodic arc deposition of TiN and Zr(C,N) at low substrate temperatures using a pulsed bias voltage J. Fessmann, W. Olbrich, G. Kampschulte (Stuttgart, F.R.G.) and J. Ebberink (Sigmaringen-Laiz, F.R.G.)	830
TiC_xN_{1-x} coatings by using the arc evaporation technique	838
AUTHOR INDEX	842
SUBJECT INDEX	845

